staff of the Scientific and Industrial Competition which is to be held in Brussels next year. M. Charles Mourlon is the Chief Secretary.

MR. HILCKEN, Librarian of the Bethnal Green Free Library, writes to us that the Library is greatly in need of one or two microscopes. "We have received," he says, "a present of interesting 'objects,' but they are useless without microscopes. Many of our readers would gladly avail themselves of the use of such instruments."

DR. R. H. GUNNING, of Rio de Janeiro and Edinburgh, has made the following munificent gifts in connexion with Her Majesty's Jubilee:—To the Council of the Royal Society of Edinburgh, a triennial prize of £105, to be named "The Victoria Jubilee Prize for the Advancement of Science." To the Council of the Society of Antiquaries of Scotland, £40 yearly, or £120 every three years, as they may prefer, to be named "The Victoria Jubilee Gift," the object of the founder being to assist experts to travel, with the view of "examining other collections, and keeping the Edinburgh Museum as completely furnished with information and examples as possible." To the Senatus of the University of Edinburgh, £200 per annum, to provide eleven post-graduation triennial prizes of £50 each. These are to be named the Monro, Sir Charles Bell, Edward Forbes, Hutton Balfour, Joseph Black, Christison, Lister, Gregory, John Thomson, Simpson, and Alison Prizes, and are to be administered by the Senatus, the incumbent of the Chair in connexion with which the prize is to be awarded having a wide choice in the subjects of examination. To the Royal College of Physicians of Edinburgh, £100 triennially, for a prize to bear the title "Dr. Gunning's Cullen Prize for the greatest benefit done to Practical Medicine." To the Royal College of Surgeons of Edinburgh, £120 triennially, for a prize to be called "The Liston Victoria Jubilee Prize," which shall be open to all Fellows and Licentiates of the College, and shall be awarded for the greatest benefit done to practical surgery. To the Edinburgh Association for the University Education of Women, £40 annually for a bursary to be called "The Victoria Jubilee Bursary." In addition to the above, Dr. Gunning has intimated, through Lord Maclaren, a gift of £100 for the Ben Nevis Observatory. Dr. Gunning, who was long resident in Brazil, is a Dignitary of the Brazilian Empire, a Fellow of the Royal Society of Edinburgh, and a Fellow of the Society of Antiquaries of Scotland.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♂) from India, presented by Mr. Francis Yare; a Cape Zorilla (*Ictonyx zorilla*) from Cape Colony, presented by Mr. J. A. Willet; a Spotted Ichneumon (*Herpestes nepalensis*) from Nepal, presented by Mr. T. C. Bacon; two Spotted Cavys (*Cœlogenys paca*) from South America, presented by Mr. William F. Kirton; an Arizona Squirrel (*Sciurus arizinensis*) from New Mexico, U.S.A., presented by Dr. R. W. Shufeldt; a Common Cuckoo (*Cuculus canorus*), British, presented by Mr. W. M. Alexander; a Lesser Kestrel (*Tinnunculus cenchris*), South European, presented by Mrs. M. Travers; two Corn Crakes (*Crex pratensis*), British, presented by Mr. S. C. Hincks; two Cardinal Grosbeaks (*Cardinalis virginianus*) from North America, presented by Mr. Samuel Nicholson; two Hybrid Herring Gulls (between *Larus argentatus* and *Larus dominicanus*), presented by Lord Lilford; two Viperine Snakes (*Tropidonotus viperinus*) from North Africa, a Bordeaux Snake (*Coronella girondica*), South European, presented by the Rev. T. W. Haines; a Grey Ichneumon (*Herpestes griseus*) from India, an Aldrovandi's Skink (*Plestiodon auratus*) from North Africa, deposited; a Crested Porcupine (*Hystrix cristata*), born in the Gardens; two Slender Ducks (*Anas gibberifrons*), bred in the Gardens.

## *OUR ASTRONOMICAL COLUMN.*

THE TOTAL SOLAR ECLIPSE OF 1886.—Mr. W. H. Pickering, who observed the total solar eclipse of August 1886 at Grenada, W.I., communicates to *Science*, vol. x. No. 230, a brief account of his results, in order that it may be published in time to be of service to the observers of the approaching eclipse on August 18. It was found that, by using rapid gelatine plates, an exposure of one or two seconds was sufficient to show the details of the inner corona satisfactorily with an ordinary telescope-lens. With a portrait-lens, the ratio of whose aperture to its focus was as one to five, the same exposure showed the outer corona satisfactorily as far as a distance of 15′ to 30′ from the limb of the moon. Beyond that the light was very decidedly fainter, and was shown best by exposures of from eight to forty seconds. The corona showed the usual short rays proceeding from the sun's poles, and from the south-western quadrant a very conspicuous ray, appearing like a hollow cone, projected to a distance of about 20′. A number of prominences were seen near the equator, on both sides of the moon; but the most conspicuous one was situated in the north-western quadrant. It extended to the height of about 100,000 miles, and had apparently a somewhat spiral structure. The spectra of the various prominences were shown very clearly by the prismatic camera. In the equatorial ones the hydrogen and H and K lines were prominent, superposed on a background of continuous spectrum; but in the large prominence the hydrogen lines were absent, although the H and K lines were strongly marked. The position of the maximum density in the continuous spectrum of the prominences was found to be quite different from that of the corona; in the former it is not far from G, whilst in the latter it lies between G and F. A large number of persons observed the shadow-bands, which appeared before and after totality. The general result of their observations indicated that the bands were about 5 inches wide and 8 inches apart, that they were coloured like the spectrum, and that they moved with a velocity comparable with that of an express train; at all events much faster than a man could run. Before totality the bands lay N. 12° W. and S. 12° E., and travelled west; after totality they lay N. 60° E. and S. 60° W., and travelled north-west.

## *ASTRONOMICAL PHENOMENA FOR THE WEEK* 1887 *JULY* 31—*AUGUST* 6.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

*At Greenwich on July* 31

Sun rises, 4h. 24m.; souths, 12h. 6m. 9·1s.; sets, 19h. 48m.; decl. on meridian, 18° 18′ N.: Sidereal Time at Sunset, 16h. 24m.

Moon (Full on August 3) rises, 17h. 15m.; souths, 21h. 36m.; sets, 1h. 56m.*; decl. on meridian, 19° 37′ S.

| Planet. | Rises. | Souths. | Sets. | Decl. on meridian. |
|---|---|---|---|---|
| | h. m. | h. m. | h. m. | ° ′ |
| Mercury | 4 26 | 11 46 | 19 6 | 14 35 N. |
| Venus | 8 41 | 14 53 | 21 5 | 1 42 N. |
| Mars | 2 2 | 10 20 | 18 38 | 23 35 N. |
| Jupiter | 11 56 | 17 10 | 22 24 | 9 45 S. |
| Saturn | 3 26 | 11 24 | 19 22 | 20 47 N. |

* Indicates that the setting is that of the following morning.

*Variable Stars.*

| Star. | R.A. | Decl. | | | | |
|---|---|---|---|---|---|---|
| | h. m. | ° ′ | | | h. m. | |
| U Cephei | 0 52·3 | 81 16 N. | Aug. | 1, | 21 30 | *m* |
| | | | ,, | 6, | 21 9 | *m* |
| Algol | 3 0·8 | 40 31 N. | ,, | 1, | 22 54 | *m* |
| V Boötis | 14 25·2 | 39 23 N. | ,, | 5, | | *M* |
| δ Libræ | 14 54·9 | 8 4 S. | ,, | 5, | 22 24 | *m* |
| V Coronæ | 15 45·5 | 39 55 N. | ,, | 4, | | *M* |
| R Ursæ Minoris | 16 31·5 | 72 30 N. | ,, | 5, | | *m* |
| U Ophiuchi | 17 10·8 | 1 20 N. | July | 31, | 4 2 | *m* |
| | | and at intervals of | | | 20 8 | |
| W Sagittarii | 17 57·8 | 29 35 S. | Aug. | 2, | 1 0 | *m* |
| T Herculis | 18 4·8 | 31 0 N. | ,, | 2, | | *M* |
| η Aquilæ | 19 46·7 | 0 43 N. | ,, | 2, | 2 0 | *M* |
| | | | | 6, | 21 0 | *m* |
| S Sagittæ | 19 50·9 | 16 20 N. | ,, | 5, | 21 0 | *m* |
| δ Cephei | 22 25·0 | 57 50 N. | July | 31, | 4 0 | *M* |
| | | | Aug. | 3, | 22 0 | *m* |

*M* signifies maximum; *m* minimum.

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*Occultations of Stars by the Moon* (visible at Greenwich).

| August. | Star. | Mag. | Disap. | Reap. | Corresponding angles from vertex to right for inverted image. | |
|---|---|---|---|---|---|---|
| | | | h. m. | h. m. | ° | ° |
| 1 | 21 Sagittarii | 5 | 0 23 | 1 29 | 99 | 323 |
| 6 | 70 Aquarii | 6 | 1 14 | 1 38 | 35 | 6 |

August 3.—Partial eclipse of the Moon. First contact with shadow 19h. 36m.; middle of eclipse 20h. 49m.; last contact with shadow 22h. 2m. Magnitude of eclipse = 0·419 of moon's diameter. The moon will rise at Greenwich at 19h. 35m.

## *GEOGRAPHICAL NOTES.*

THE rumour as to the death of Mr. Stanley is universally discredited in geographical circles, and among those directly interested in the Emin Pasha Expedition. The rumour seems quite inconsistent with the news as to Mr. Stanley's having left the Aruwimi River on June 3 for Wadelai. Had he been shot, as reported, it must have been after this date, and during the land journey, whereas one version of the rumour gives out that he was killed on the Congo. He may meet with Emin Pasha sooner than he expected. Emin, it seems, is at present exploring on the south of the Albert Nyanza, endeavouring to find the connexions of the great affluent he discovered on the south side of the lake, and ascertain whether it may proceed from the Mwuta Nzige. So that he and Mr. Stanley may meet half way. Letters from Mr. Stanley are expected in this country early in August.

THE Report of Dr. Hans Schinz on his exploration of the German colony known as Luderitzland (South-West Africa) has just been published. Dr. Schinz made two journeys: the first, in 1884, from Angra Pequena to Am-Hub on the Xamob, a sub-affluent of the Orange; and the second, in 1885, across Namaqua-land and Damara-land, and the little-known region which separates Damara-land from the Cunene River. The Report contains much valuable information, especially on the flora and the people of the region visited. The region is quite as sterile and hopeless as it has been painted by previous visitors. It is only on the north of Etosha (18° S. lat.) that the flora and fauna become anything like abundant—bauhinia, palms, cassia, baobab. The population becomes more dense as we approach the Cunene. But three-fourths, if not four-fifths, of the new German colony is unworkable and uninhabitable.

IN the new number of *Timehri* the valuable serial published in British Guiana, will be found a condensed translation of Père de la Borde's "History of the Origin, Customs, Religion, Wars, and Towns of the Caribs of Antilles," the first of a series of reprints of the literature of West India and Guiana red men, which it is proposed to publish from time to time in the journal. A large part of the number is devoted to Mr. Im Thurn's notes on the plants observed during the Roraima expedition.

THE last Annual Report of the Russian Geographical Society for 1886, which has just reached us, contains a good deal of useful information. An account of several interesting journeys is given. The publications of the Society were numerous and valuable. Seven fascicules of the Memoirs appeared during the year, containing the work on the geology of Lake Baikal, by M. Tchersky; a hydrological inquiry into the Upper and Middle Amu-daria, by the late M. Zuboff; on the landslips at Odessa, by M. Jarintseff; on the exposure of thermometers, by M. Savelieff; on a journey to North-West Persia and the Transcaspian region, by M. Nikolsky; on the province of Olonets, by M. Polyakoff; and on the Votyaks, by M. Sokolovsky. The Society published, moreover, a volume of the "Works of the Siberian Expedition," containing Fr. Schmidt's "Miocene Flora of Sakhalin," and three volumes of observations of the Polar stations on the Lena and on Novaya Zemlya. It is good news that the addenda to the capital "Geographical Dictionary of Russia," by P. Semenoff, are being rapidly prepared for the press. The great gold medal of the Society has been awarded to M. Potanin for his twenty years' geographical work; and that of Count Lütke to M. Tchersky for his remarkable geological explorations around Lake Baikal and in East Siberia altogether. Other gold medals have been awarded to MM. Nalivkin for their work "On the Position of Woman amidst the Settled Population of Ferganah," published last year at Kazan; to M. Yastreboff for a work on Turkish Servians; to M. Makaroff for his researches into the double currents in straits; to MM. Skassi and Bolsheff for cartographical work; and to M. Eigner for his work at the Lena Polar station. Many silver medals have been awarded for works of less importance. The Committee of the Russian Geographical Society for Pendulum Observations and the Meteorological Committee have done most useful work.

## *THE TECHNICAL EDUCATION BILL.*

### I.

THE following is the text of the Bill to facilitate the provision of technical instruction:—

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. This Act may be cited as the Technical Instruction Act, 1887.

2. Any local authority as defined by this Act may pass a resolution that it is expedient to provide for supplementing by technical instruction the elementary education supplied in its district, and for that purpose to put in force the provisions of this Act.

3. (1) A local authority shall, before proceeding to carry into effect a resolution under this Act, cause the resolution to be published in the prescribed manner, and within the prescribed time, not being less than two months after the publication, fifty persons entitled to vote at the election of members of the local authority, or one-third of the total number of those persons, may, by a written requisition, require a poll of those persons to be taken as to carrying the resolution into effect, and thereupon the poll shall be taken in the prescribed manner, and in accordance with the prescribed regulations.

Provided that—

(*a*) the poll shall, so far as circumstances admit, be conducted in like manner in which the poll at a contested municipal election is directed by the Ballot Act, 1872, to be conducted; and, subject to any exceptions or modifications contained in any order of the Department of Science and Art made in pursuance of this Act, the Ballot Act, 1872, shall apply accordingly; and

(*b*) all persons entitled to vote at the election of members of the local authority shall be entitled to vote at the taking of the poll; and

(*c*) each of those persons shall be entitled to one vote only.

(2) If the resolution is negatived at the poll it shall not be carried into effect, and shall not be again proposed until the expiration of not less than twelve months after the taking of the poll.

(3) This section shall not apply to the metropolis as defined in the Elementary Education Act, 1870.

4. (1) For the purpose of supplementing by technical instruction the elementary education supplied in its district, a local authority may in pursuance of a resolution under this Act—

(*a*) Provide technical schools for its district; or

(*b*) Combine with any other local authority for the purpose of providing technical schools common to the districts of both authorities; or

(*c*) Contribute towards the maintenance, or provision and maintenance, of any technical school; or

(*d*) Make such arrangements as to the local authority seem expedient for supplementing by technical instruction the instruction given in any public elementary school in its district.

(2) The expenses incurred by a local authority for the purposes of this Act shall be defrayed out of the local rate.

(3) Provided that no payment shall be made under this Act out of the local rate in respect of a scholar unless or until he has obtained a certificate from the Education Department that he has passed the examination in reading, writing, and arithmetic prescribed by the standard set forth in the schedule to this Act (being the Sixth Standard fixed by the minutes of the Education Department in force at the passing of this Act) or an examination equivalent thereto.

(4) Two or more local authorities may, with the sanction of the Department of Science and Art, enter into any agreement which may be necessary for carrying into effect any resolution under this Act; and any such agreement may provide for the appointment of a joint body of managers, for the proportion of the contributions to be paid by the respective authorities, and

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